

# ARCHIVED REPORT

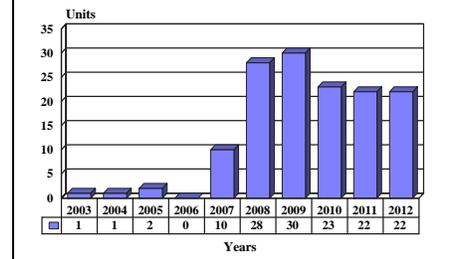
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## Bell/Agusta BA609 - Archived 11/2003

### Outlook

- First flight occurred in March 2003
- Certification is planned for mid-2007

10 Year Unit Production Forecast  
2003 - 2012



### Orientation

**Description.** Twin-turboshaft-powered, six- to nine-passenger, corporate tiltrotor aircraft.

**Sponsor.** Privately sponsored by Bell/Agusta Aerospace Company.

**Contractors.** Bell/Agusta Aerospace Company (BAAC); Fort Worth, Texas, USA. BAAC is a joint venture of Bell Helicopter Textron and Agusta SpA. Agusta is part of AgustaWestland.

**Status.** Development

**Total Produced.** One BA609 prototype has been produced.

**Application.** Corporate/executive transportation. Other potential applications include medical evacuation and offshore oil operations. Potential military applications include troop transport, search-and-rescue, and tiltrotor pilot training.

**Price Range.** BA609 in standard configuration, \$10-\$12 million in 2003 U.S. dollars.

### Technical Data

**Design Features.** The BA609 is a cantilever high-wing monoplane similar in size to Bell's XV-15 tiltrotor research aircraft. The engines are located in wing-tip mounted nacelles that rotate from full vertical (90

degrees) for heliborne operation to full horizontal for forward, wing-borne flight. The aircraft is equipped with a BAE Systems triplex digital flight control system.

	<u>Metric</u>	<u>U.S.</u>
<b>Dimensions</b>		
Rotor diameter	7.92 m	26.0 ft
Length overall	13.41 m	44.0 ft
Width overall, rotors turning	18.29 m	60.0 ft
Baggage capacity	1.42 cu m	50.0 cu ft
<b>Weight</b>		
Maximum take-off weight	7,631 kg	16,800 lb
Maximum useful load	2,500 kg	5,500 lb

**Performance<sup>(a)</sup>**

Maximum cruise speed	509 km/h	275 kt
Service ceiling (approx.)	7,620 m	25,000 ft
Maximum range, no reserves	1,389 km	750 nm

**Propulsion**

BA609 (2) Pratt & Whitney Canada PT6C-67A turboshaft engines rated 1,447 kW (1,940 shp) each.

**Crew/Seating**

Crew of one or two. Six to nine passengers.

<sup>(a)</sup>At maximum take-off weight, ISA.



BA609

Source: Bell/Agusta Aerospace Company

## Variants/Upgrades

Model 620. The 620 is a proposed 22-seat version of the BA609. Little has been heard lately of the 620 design.

Other Versions. Bell is also considering development of other versions of the BA609, such as a 28,000-pound

class, 19-seat derivative called the BA619 that is aimed at the commuter market. A 27-seat version called the BA627 is also being studied. In addition, Bell is considering four-engine derivatives of the BA609, such as the 26-seat BA626 or a possible 32-seat aircraft.

## Program Review

**Background.** Partners in the V-22 Osprey military tiltrotor aircraft program, Bell Helicopter Textron and Boeing Company also examined the potential of tiltrotor

technology in the commercial marketplace. Although an early concept involved a 50-passenger commercial tiltrotor, the two companies turned their attention to a

six- to nine-passenger version for the corporate aircraft operator. This version, once known as the D600, was later called the 609.

During the September 1995 NBAA convention in Las Vegas, Nevada, Bell circulated a proposal for a nine-passenger corporate tiltrotor aircraft. The company's intention was to provoke thought in the corporate market concerning potential tiltrotor applications. Bell had already begun tradeoff studies on such design issues as conventional controls versus fly-by-wire and the use of composite components versus metal. Boeing participated in the studies as part of a possible joint program.

Bell and Boeing also conducted market research aimed at determining the size of the potential market for a commercial tiltrotor.

In November 1996, Bell and Boeing launched a six- to nine-passenger corporate tiltrotor called the 609. However, in March 1998, as part of a decision to exit the commercial rotorcraft business, Boeing transferred its 49 percent ownership stake in the 609 program to Bell.

In September 1998, Bell and Agusta signed an agreement to establish a joint venture for the design, development, production, marketing, and support of the 609, as well as the A139 helicopter that was being developed by Agusta. This joint venture, called Bell/Agusta Aerospace Company, was established the following November.

The 609 tiltrotor is now known as the BA609. Agusta's responsibilities in the BA609 program include production of the empennage, ailerons, gearboxes, and other components of the aircraft. The company is a risk-sharing partner in the program. Agusta will also assemble aircraft for sales in Europe and elsewhere.

In May 2000, BAAC announced the selection of Fuji Heavy Industries to manufacture fuselages for the BA609. The Japanese company will be a risk-sharing subcontractor to Bell. Fuji's responsibilities will include the forward cockpit, the center fuselage, the aft fuselage, and system installation. Fuji replaces Nashville, Tennessee based Aerostructures Corp as the BA609 fuselage manufacturer.

BAAC has been building the fuselages for the four prototype BA609s in Fort Worth, Texas. Fuji will supply the fuselages for production aircraft.

Specifications. The current design envisions an aircraft similar in size to the original XV-15 tiltrotor technology demonstrator. The sole existing XV-15 has in fact been used as a marketing tool, appearing in corporate livery at a number of events and in press release photographs.

The BA609 cruises at 275 knots and has a range of 750 nautical miles. It is pressurized, and will be certified for single-pilot IFR operations. Maximum take-off weight is 7,631 kilograms (16,800 pounds). The aircraft is powered by two Pratt & Whitney Canada PT6C turboshaft engines, each rated 1,940 shp.

## Funding

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Not available.

## Recent Contracts

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Not available.

## Timetable

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<u>Month</u>	<u>Year</u>	<u>Major Development</u>
Sep	1995	Bell circulated corporate tiltrotor proposal at NBAA convention in Las Vegas
Feb	1996	XV-15 displayed in corporate livery at Heli-Expo '96 in Dallas
Nov	1996	Program launched
Mar	2003	Initial flight of BA609
	2007	Certification and initial deliveries planned

## Worldwide Distribution

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Not applicable.

## Forecast Rationale

The initial BA609 prototype made its first flight in March 2003. The first phase of the BA609 flight test program was completed in May 2003. During this phase, the prototype flew in excess of 14 flight hours. The aircraft was then dismantled for a detailed inspection. Current plans call for it to return to the air in 2004.

The initial BA609 prototype will eventually be joined in the flight test program by three other prototypes. FAA certification is planned for mid-2007, with initial deliveries to follow immediately thereafter. As of March 2003, BAAC had advance orders for nearly 70 BA609s.

Agusta currently has a 25 percent workshare in the BA609 program. With Bell now focused on the V-22, Agusta's involvement in the BA609 program may be expanded, in an attempt to limit costs and delays. Ultimately, the Italian company may gain a nearly 50 percent workshare in the program. Details of the exact tasks to be transferred to Agusta have yet to be decided. In addition, by the end of 2003, Agusta plans to exercise an option that would increase its share in BAAC to 50 percent from its current 45 percent.

BA609s are initially to be assembled solely at Bell's new \$40 million, 450,000-square-foot tiltrotor assembly center at Amarillo International Airport in Texas. Eventually, a second BA609 assembly line is to be established in Italy. BAAC plans to produce up to 60 BA609s per year. Approximately 25 percent are to be assembled in Italy, and the remainder in Texas. If the Japanese government were to place a substantial order for BA609s, a third assembly line could be established in Japan.

Although the BA609 has not suffered through the difficulties of the V-22 program, the latter's recent problems nevertheless negatively impacted the smaller tiltrotor. Bell has insisted that the V-22's problems are not fundamental to tiltrotor technology, and do not

seriously affect the BA609. However, the company has always planned that the V-22 would be the lead program. Thus, after Bell saw that the V-22 effort was going to be delayed by a number of years, it decided in early 2002 to slow development and certification of the BA609 in order to allow the V-22 to remain the lead program.

The U.S. Marine Corps has been evaluating acquisition of the BA609 as a low-cost option to train pilots on tiltrotors. Acquiring the BA609 would enable the Marines to avoid dedicating MV-22s to the training role. Other possible customers include the U.S. Air Force and the U.S. Army.

As part of its Deepwater program, the U.S. Coast Guard could acquire the HV-609, a derivative of the BA609, for use in the search-and-rescue (SAR) role. The HV-609 is equipped with a winch and a larger 965 mm sliding cabin door, and is able to carry as many as six survivors. In June 2002, the Coast Guard awarded a Lockheed Martin/Northrop Grumman team called Integrated Coast Guard Systems (ICGS) a contract for the Deepwater program. Besides the HV-609, other rotorcraft candidates for the program include BAAC's own AB139 and the Eurocopter EC 155.

A commercial tiltrotor aircraft does have market potential, considering the possible positive impact of the rotorcraft on congested intercity air passenger markets. The BA609 will compete for sales largely with conventional helicopters. However, it might also take some sales away from turboprop aircraft, as it provides the speed and range of a turboprop combined with the vertical take-off and landing capability of a helicopter.

The flexibility of the BA609 is a strong selling point. Nevertheless, BAAC is faced with a marketing challenge, particularly (and unfairly) in light of the recent negative publicity surrounding the V-22 program.

## Ten-Year Outlook

### ESTIMATED CALENDAR YEAR PRODUCTION

Aircraft	(Engine)	High Confidence Level					Good Confidence Level			Speculative			Total 03-12
		thru 02	03	04	05	06	07	08	09	10	11	12	
BELL/AGUSTA (Consortium)													
BA609	PT6C-67A	0	1	1	2	0	10	28	30	23	22	22	139
Total Production		0	1	1	2	0	10	28	30	23	22	22	139